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TO: File

THRU: Joe Helfrich, Permit Supervisor JOR for JDS

FROM: James D. Smith, Reclamation Specialist

RE: Minor Coal Exploration, Canyon Fuel Company, LLC., Dugout Canyon Mine, ACT/007/039-99B, Folder #2, Carbon County, Utah

SUMMARY:

Canyon Fuel Company is requesting approval to drill up to six exploratory holes and conduct one seismic survey to evaluate reserves and quality of coal seams within the Blackhawk Formation. The six exploratory sites, the seismic line, and associated access routes will be on State and private lands within the current Dugout Canyon Mine permit area. The seismic line will follow an existing road or trail. Canyon Fuel Company estimates that fewer than 250 tons of coal, as drill-cores, will be removed during drilling.

TECHNICAL ANALYSIS:

PERFORMANCE STANDARDS

Regulatory Reference R645-202-200, -202-235, -244

Analysis:

As the borings are advanced, the occurrence of ground water will be recorded and documented with other exploration data. Air and foam are to be the initial drilling fluids, but drilling mud and lost circulation materials will be used if needed. Ground-water resources can be difficult to identify during drilling, especially if drilling mud is used. CFC or Ark Land Company will have an authorized representative present during drilling operations. The applicant should assure that someone, either these representatives or other personnel, who is qualified to identify and record zones of lost circulation or drilling fluid loss, ground-water inflow, and elevations of water in the bore hole is on-site at all times during drilling.

Based on previous experience in this area, the applicant is not expecting to encounter any significant inflows of ground water, and is not anticipating that any of the exploration bore holes will be developed and maintained as water monitoring wells or piezometers. Because of the random and discontinuous nature of perched aquifers in the upper Blackhawk and overlying

formations, wells completed to measure water levels in this zone would be of little value or interest, except perhaps to land owners and holders of water rights. However, experience in the Book Cliffs indicates that the lower Blackhawk Formation and the strata immediately beneath are often saturated and may be in hydrologic connection. If water is present in these lower strata, some of the borings should be developed as piezometers to determine the pre-mining potentiometric surface and to monitor for changes as mining progresses through the area. Preparation and consideration should be made in advance for completing up to three of the borings as piezometers, spaced approximately one per square- mile, if ground water is encountered in these lower strata.

Three nearby piezometers measure water levels in the Castlegate Sandstone, and at least one of the exploratory borings also should be completed as a piezometer in the Castlegate Sandstone. This could be either as a fourth dedicated piezometer or as a duel completion in the same bore hole as one of the three Blackhawk piezometers, the decision probably best being made on-site as zones of lost circulation or drilling fluid loss, ground-water inflow, and elevations of water in the bore hole are identified.

Findings:

Information provided in the Application is not considered adequate to meet the requirements of this section. Prior to approval the applicant must modify the exploration plan to include the following:

R645-202-235 - CFC or Ark Land Company will have an authorized representative present during drilling operations. The applicant should assure that someone, either these representatives or other personnel, who is qualified to identify and record zones of lost circulation or drilling fluid loss, ground-water inflow, and elevations of water in the bore hole is on-site at all times during drilling.

R645-202-235, -244.100 - The applicant should be prepared to complete up to three of the borings as piezometers, spaced approximately one per square- mile, if ground water is encountered in the Blackhawk Formation and adjacent strata. The applicant should also be prepared to complete at least one boring as a piezometer in the Castlegate Sandstone.

RECOMMENDATION:

Issue the exploration permit only after the applicant has made changes to the exploration plan that adequately addresses the deficiencies given above.